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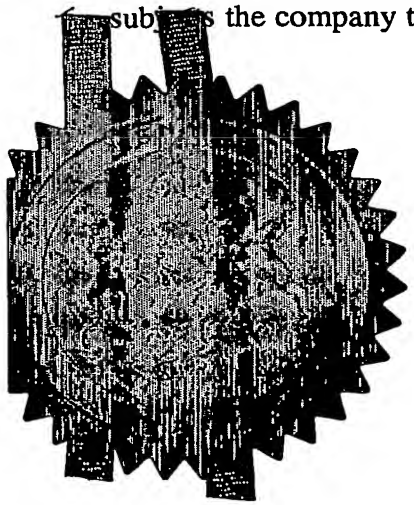
I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.



Signed K Behan

Dated 2 December 2004

Patents Form 1/77

Patents Act 1977
(Rule 16)

THE PATENT OFFICE
F
18 NOV 2003
NEWPORT

The Patent Office

18NOV03 E853046-3 D02833
P01/7700 0.00-0326820.8

Request for grant of a patent

See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office

Cardiff Road
Newport
South Wales
NP10 8QQ

1. Your reference RRS/8640

2. Patent application number *(The Patent Office will fill this part in)* 0326820.8 18 NOV 2003

3. Full name, address and postcode of the or of each applicant *(underline all surnames)*

Keith Froggatt
Birchwoodmoor House, Roston, Ashbourne, Derbyshire, DE6 2EH.

Patents ADP number *(if you know it)* 10692020002

If the applicant is a corporate body, give the country/state of its incorporation

4. Title of the invention

Calorifier

5. Name of your agent *(if you have one)*

"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*

Swindell & Pearson

48 Friar Gate
Derby
DE1 1GY

Patents ADP number *(if you know it)* 00001578001

6. Priority: Complete this section if you are declaring priority from one or more earlier patent applications, filed in the last 12 months.

Country	Priority application number *(if you know it)*	Date of filing *(day / month / year)*

7. Divisionals, etc: Complete this section only if this application is a divisional application or resulted from an entitlement dispute (see note f)

Number of earlier UK application	Date of filing *(day / month / year)*

8. Is a Patents Form 7/77 (Statement of inventorship and of right to grant of a patent) required in support of this request?

NO

Answer YES if:

a) any applicant named in part 3 is not an inventor, or
b) there is an inventor who is not named as an applicant, or
c) any named applicant is a corporate body.

Otherwise answer NO (See note d)

Patents Form 1/77

9. Accompanying documents: A patent application must include a description of the invention. Not counting duplicates, please enter the number of pages of each item accompanying this form:

Continuation sheets of this form	
Description	5
Claim(s)	
Abstract	
Drawing(s)	1 + 1 Sh

10. If you are also filing any of the following, state how many against each item.

Priority documents	
Translations of priority documents	
Statement of inventorship and right to grant of a patent (Patents Form 7/77)	
Request for a preliminary examination and search (Patents Form 9/77)	
Request for a substantive examination (Patents Form 10/77)	
Any other documents (please specify)	

11. I/We request the grant of a patent on the basis of this application.

Signature(s) Swindell & Pearson Swindell & Pearson Date 17/11/2003

12. Name, daytime telephone number and e-mail address, if any, of person to contact in the United Kingdom: Mr. R.R. Sales (01332) 367051

Warning

After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

Notes

a) If you need help to fill in this form or you have any questions, please contact the Patent Office on 08459 500505.

b) Write your answers in capital letters using black ink or you may type them.

c) If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.

d) If you have answered YES in part 8, a Patents Form 7/77 will need to be filed.

e) Once you have filled in the form you must remember to sign and date it.

f) Part 7 should only be completed when a divisional application is being made under section 15(4), or when an application is being made under section 8(3), 12(6) or 37(4) following an entitlement dispute. By completing part 7 you are requesting that this application takes the same filing date as an earlier UK application. If you want the new application to have the same priority date(s) as the earlier UK application, you should also complete part 6 with the priority details.

Calorifier

This invention concerns improvements in or relating to calorifiers, and also a method of preventing build up of bacteria in a calorifier.

Calorifiers are used to heat water, and may be provided in domestic, institutional or commercial situations. A calorifier may include an electric heater, or for instance a boiler where hot fluid is passed through pipework extending through a water tank or similar. Problems can be encountered in calorifiers where water stands for a significant time. Bacteria and especially legionella may grow and multiply in such water as it stagnates, and particularly if the water has been warmed.

According to the present invention there is provided a calorifier, the calorifier including a receptacle for water to be heated, and one or more decontaminating members restrainably located within the receptacle and freely movable therein, the or each decontaminating member having a surface of an antibacterial material.

The calorifier is preferably arranged such that the decontaminating member or members will generally locate in a lowermost part or parts of the receptacle.

The antibacterial material may comprise silver or a silver compound.

The decontaminating member or members may have a coating of antibacterial material. The decontaminating member or members may be any of spherical, oval, cuboidal, or be in the form of lengths of strip. The decontaminating member or members may have a contoured surface, which may include projections which may be in the form of spikes.

The decontaminating member or members may be formed from material in the form of a mesh, which may be formed into a required shape.

The decontaminating member or members may be made of any of copper, steel, plastics material or silver.

The decontaminating member or members may be solid or hollow. One or more passages may be provided through the decontaminating member or members, with the surfaces of the passages being formed by an antibacterial material.

A drain is preferably provided towards the lower part of the receptacle, with filter means to prevent the decontaminating member or members from passing through the drain. The filter means may have an outer surface of anti bacterial material.

At least the part of the drain which extends into the receptacle may have an outer surface of anti bacterial material.

A coating of anti bacterial material may be provided on the inner surface of a lower part of the receptacle.

The invention also provides a method of preventing build up of bacteria in a calorifier, the method including locating one or more decontaminating members in the calorifier, with the or each decontaminating member having an outer surface of an anti bacterial material.

The decontaminating member may be according to any of the preceding eleven paragraphs.

Means may be provided for retaining the decontaminating member or members within the calorifier.

An embodiment of the present invention will now be described by way of example only with reference to the accompanying drawing, which is a diagrammatic cross sectional view through a calorifier according to the invention.

The drawings show a calorifer 10 including a receptacle in the form of a tank 12. A heating element 14 is provided to heat water within the tank 12. It is to be realised that other heating means for the water could be used, such as a boiler supplying heated fluid to pass through a coil or other structure of pipework in the tank 12.

An outlet 16 for heated water is provided towards at the top of the tank 12. An inlet 18 is provided towards the lower part of the tank 12 and is connected to a cold water feed (not shown). A drain 20 is provided in a still lower part of the tank 12. The drain 20 includes a pipe 22 which is threadably mounted on the tank 12, and at least the part of the pipe 22 which extends into the tank 12 may be provided with an anti bacterial coating of, for instance silver. A filter 24 is provided over the inner end of the pipe 22, and the filter 24 is also made of an anti bacterial material such as silver.

A plurality of decontaminating members in the form of silver coated, generally spherical members 26 are provided in the tank 12 so as to be freely movable therein. The decontaminating members 26 have a plurality of passages extending therethrough which also have a lining of decontaminating material. A coating of decontaminating material could also be provided on the inner surface of a lower part of the tank 12, as shown by the broken line 28.

In use, the decontaminating members 26 will locate by gravity towards the lowest part of the tank 12, thereby remaining in contact with water in the tank, even if this is at a very low level. The filter 24 prevents the

decontaminating members 26 passing there through, even during emptying or flushing of the tank 12.

There is thus provided a relatively straightforward arrangement and method for preventing build up of bacteria in calorifiers. For existing tanks, the arrangement could readily be retro fitted, with the decontaminating members 26 located in a conventional tank, and an appropriate filter being provided over the drain.

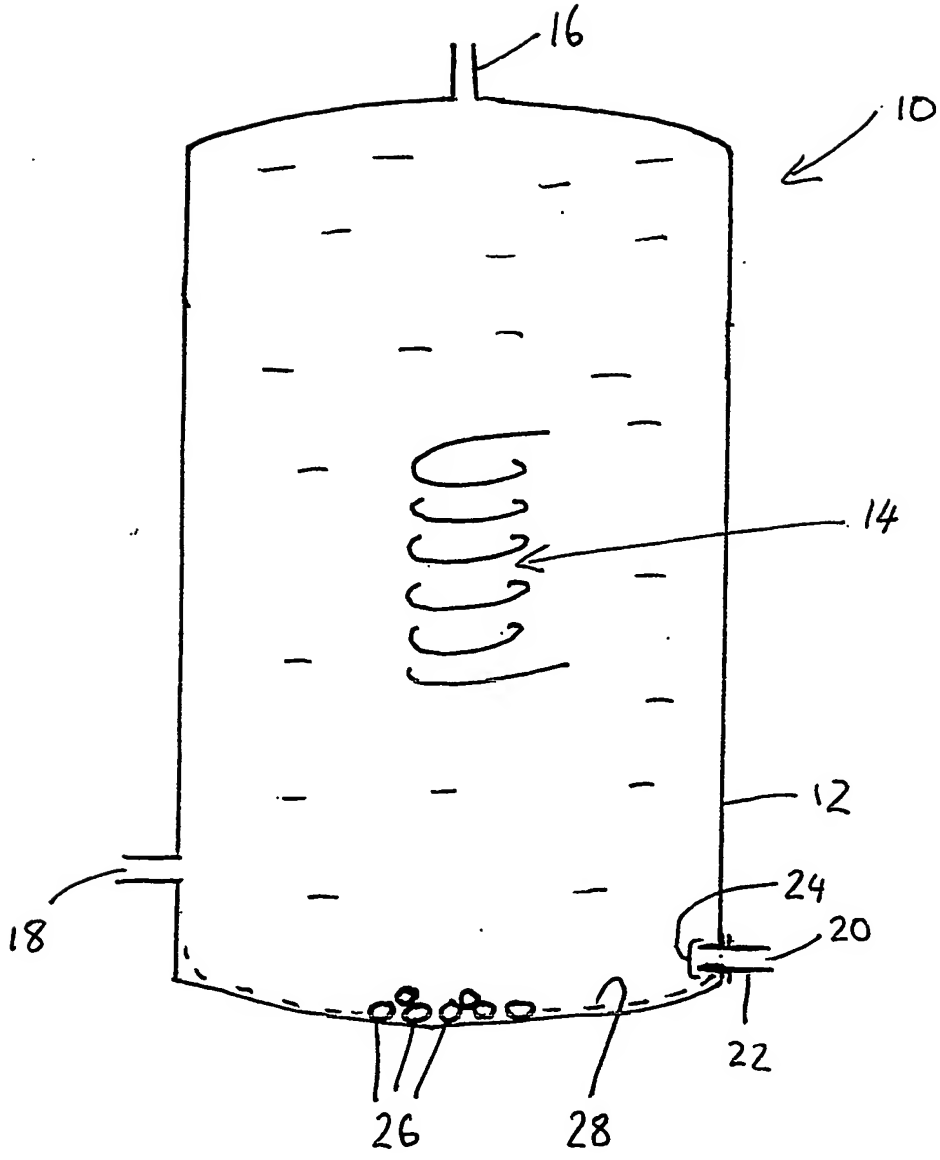
The feature of the surfaces of the passages through the decontaminating members being provided by antibacterial material, means that even if the decontaminating members become abraded and perhaps lose part of their antibacterial coating, the coating within the passages will remain.

Many other modifications or combinations of the above features may be provided. For instance a different anti bacterial material may be used. The decontaminating members may take a number of different shapes. As well as being spherical or oval, they could be cuboidal or could include lengths of strip. The surface of the decontaminating members may be contoured, and could include projections which may be in the form of spikes.

The decontaminating members may be made of mesh, which may be silver coated, and may be shaped as required into a particular shape such as a sphere or oval. The decontaminating members may have a coating of antibacterial material and could be formed from copper, steel or plastics material. Alternatively, it may be possible to use solid antibacterial material. The decontaminating members may be solid or hollow.

Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or

shown in the drawings whether or not particular emphasis has been placed thereon.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The invention also provides a method of preventing build up of bacteria in a calorifier, the method including locating one or more decontaminating members in the calorifier, with the or each decontaminating member having an outer surface of an anti bacterial material.

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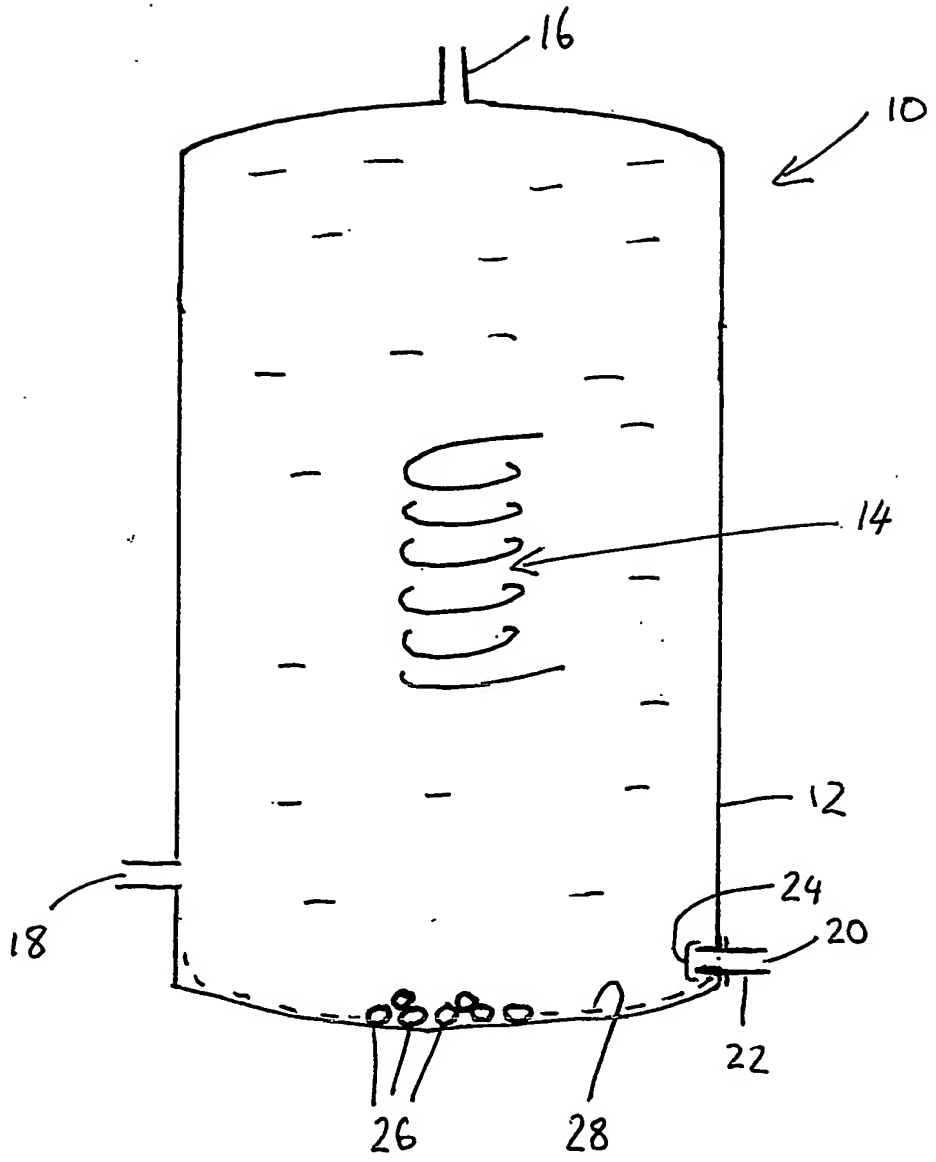
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